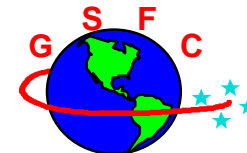


## NETWORKS AND MISSION SERVICES DIRECTORATE



### STS-95 SPACEHAB/SPARTAN-201 FLIGHT READINESS REVIEW

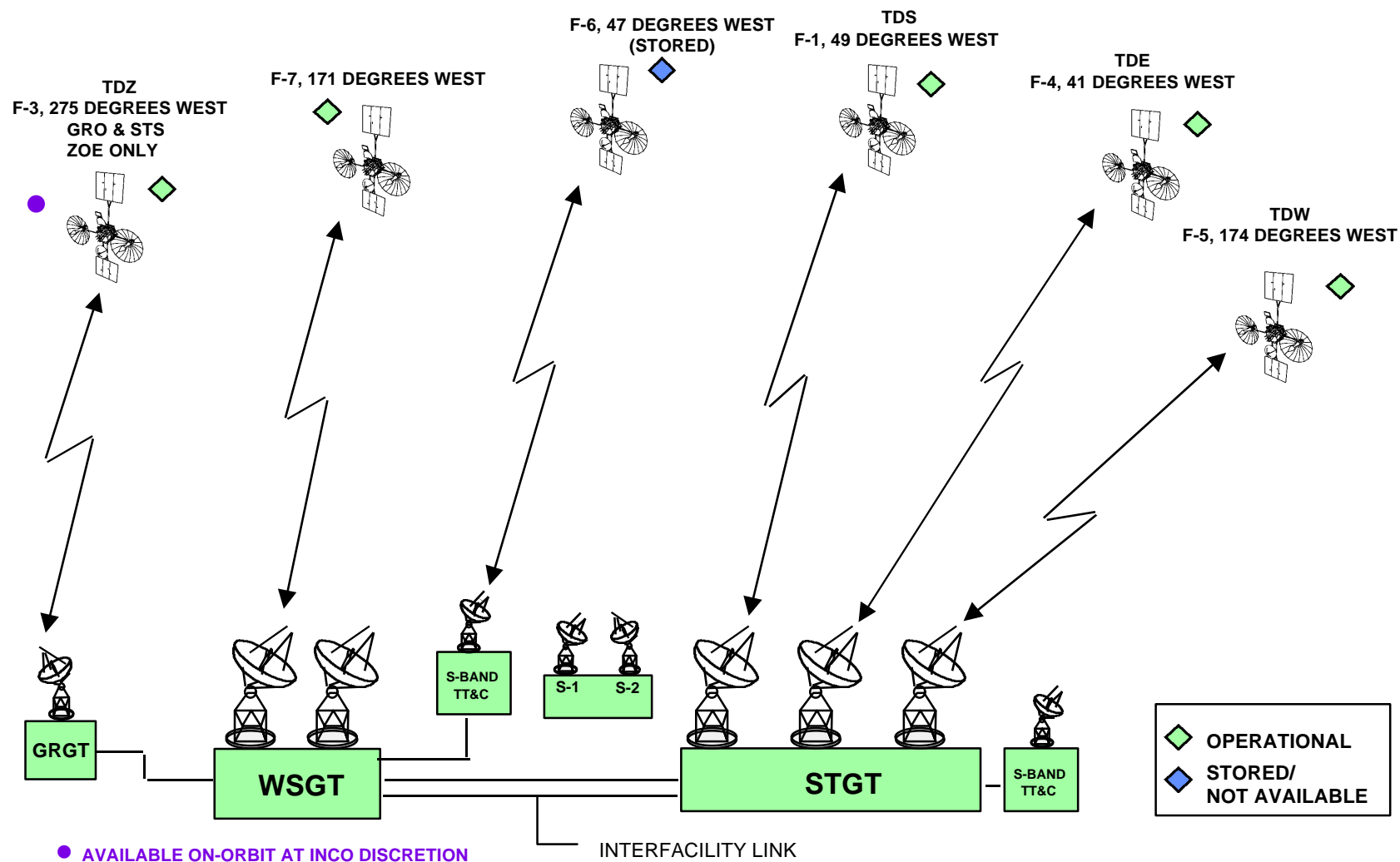
#### NETWORKS



#### AGENDA

- TDRSS CONSTELLATION
- SIGNIFICANT CHANGES
- NETWORK IP CONFIGURATION
- ASCENT PROFILE
- CONFIGURATION MANAGEMENT
- CRITICAL PERIODS
- READINESS CERTIFICATION

GARY A. MORSE  
GSFC/NETWORKS  
OCTOBER 1998

**N&MS****CODE 450.3****STS-95  
NETWORKS****TDRSS CONSTELLATION**

**N&MS****CODE 450.3****STS-95  
NETWORKS****SIGNIFICANT CHANGES**

- **GROUND NETWORK**
  - **MILA/PDL/BDA**
    - **MBR - PRIME FOR LAUNCH (LEGACY EQUIPMENT AVAILABLE AS THIRD BACKUP)**
      - **TRACKING ACQUISITION PROCESSOR (TAP)**
      - **MIL/PDL TERRESTRIAL LINK MUX (MICROWAVE REPLACEMENT)**
      - **NCPS INSTALLATION AT PDL (ROBUST UPLINK)**
      - **MILA NCPS UPLINK COMMANDING FOR ORBITER**
      - **BLOCKER/DEBLOCKER REPLACEMENT FOR TCDS**
    - **MIL 9-METER #1 SUBREFLECTOR REPLACED**
    - **BERMUDA**
      - **ONE UHF SYSTEM REMOVED; SENT TO WLPS; REMAINING SYSTEM FULLY REDUNDANT - RX/TX**
      - **CLOSURE OF C-BAND EFFECTIVE OCTOBER 1, 1998**

**N&MS****CODE 450.3****STS-95  
NETWORKS****SIGNIFICANT CHANGES (cont'd)**

- **GROUND NETWORK (cont'd)**
  - **DRYDEN**
    - **ATF-1 PRIME FOR STS-95**
    - **NCPS INSTALLATION COMPLETED END OF JULY 1998; SITE TRAINING CONDUCTED IN AUGUST 1998**
    - **ATF-2 ENGINEERING UPGRADE TO 7-METER COMPLETED END OF SEPTEMBER 1998**
    - **NEWLY PROVIDED NASCOM PTP BLOCKING/DEBLOCKING WILL BE USED**
    - **UPGRADE OF 512 K CIRCUIT TO 640 K TO SUPPORT SPARTAN 500 K PLAYBACKS**

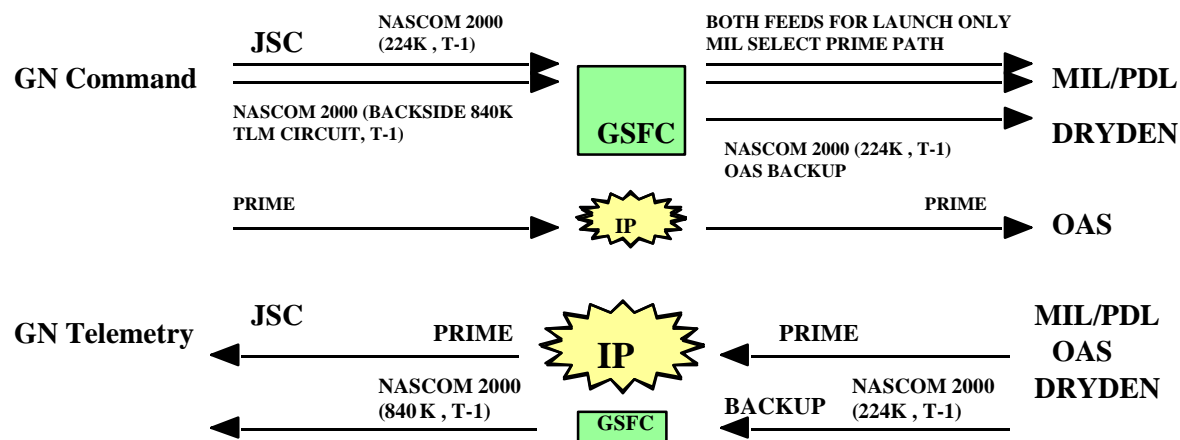
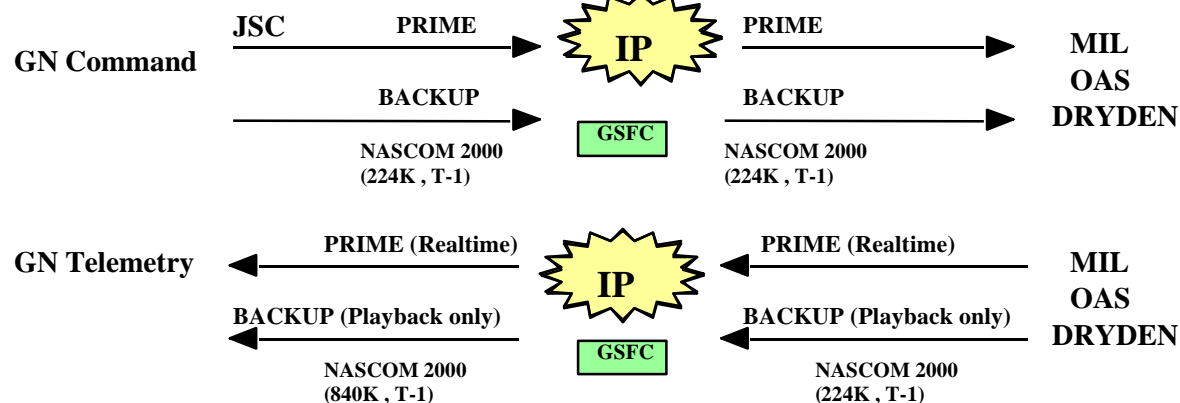
**N&MS****STS-95  
NETWORKS****CODE 450.3**

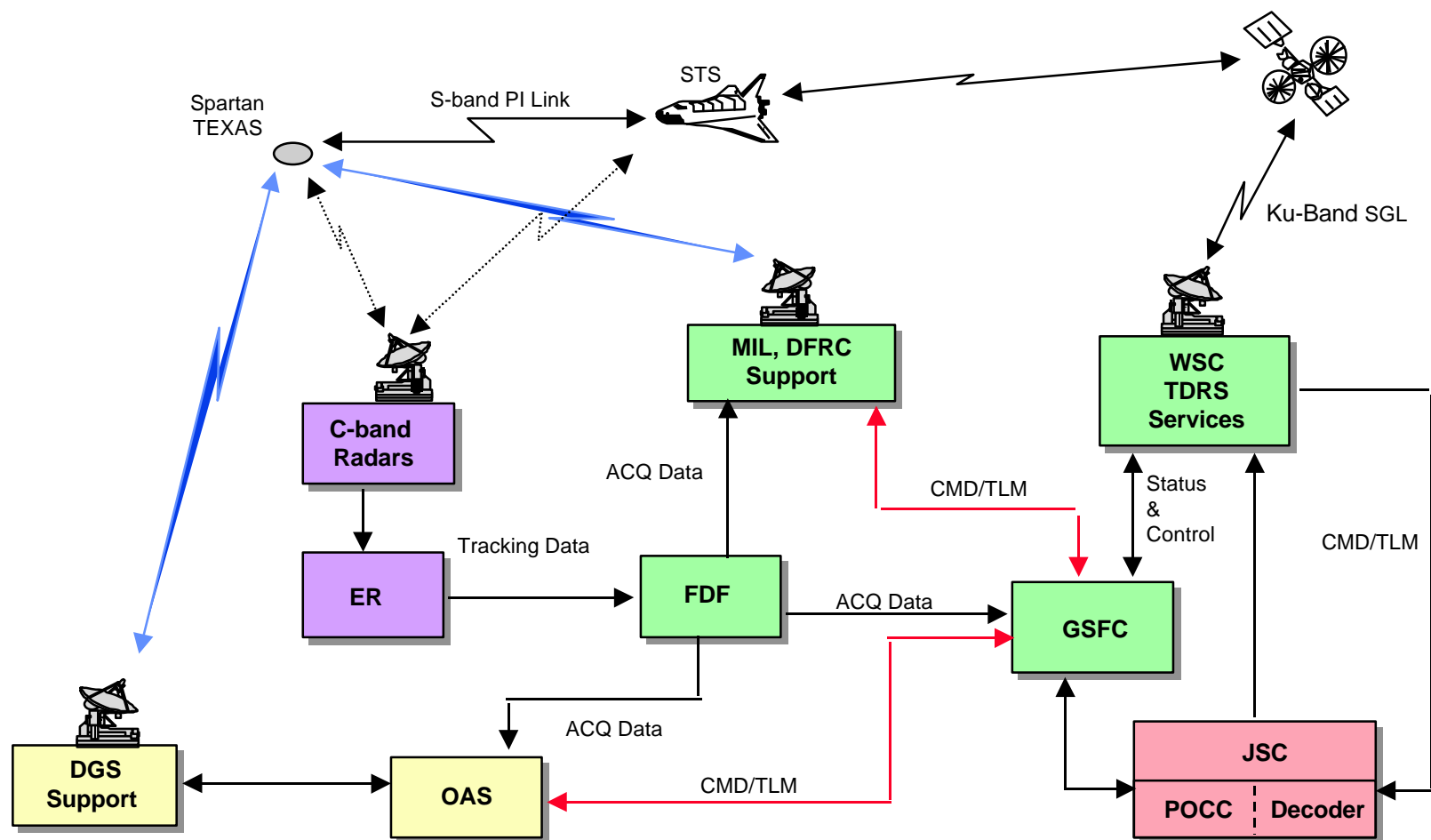
## **SIGNIFICANT CHANGES (cont'd)**

- **SPACE NETWORK**
  - **WSC**
    - **SOFTWARE 98002 DELIVERED TO WSGT - SEPTEMBER 2, 1998; STGT - SGLT 1 AND 3 - AUGUST 26, 1998**
      - **CONTAINS SOFTWARE UPDATE FOR GUAM, CANNED SHO EDITOR, AND WDISC (TCP-IP) INTERFACE**
  - **NCC**
    - **NAM 377, ISSUED ON AUGUST 31, 1998 REDUCED THE NCC SAR ACCEPTANCE TIME, FROM A USER, FROM 10 MINUTES TO 7 MINUTES**
      - **ENHANCES SCHEDULE CAPABILITY FOR SHUTTLE DURING OVERLAPPING SHO PERIODS**
  - **GUAM**
    - **AVAILABLE FOR S- AND KU-BAND FORWARD AND RETURN**
      - **OFF-SITE DATA CAPABILITY LIMITED TO TWO 192 KB STREAMS AND ONE 1024 KB**
- **C-BAND RADARS**
  - **ASCC DOWN FOR RELOCATION UNTIL OCTOBER 31, 1998**

**N&MS****CODE 450.3****STS-95  
NETWORKS****IP NETWORK CHANGES SINCE STS-91**

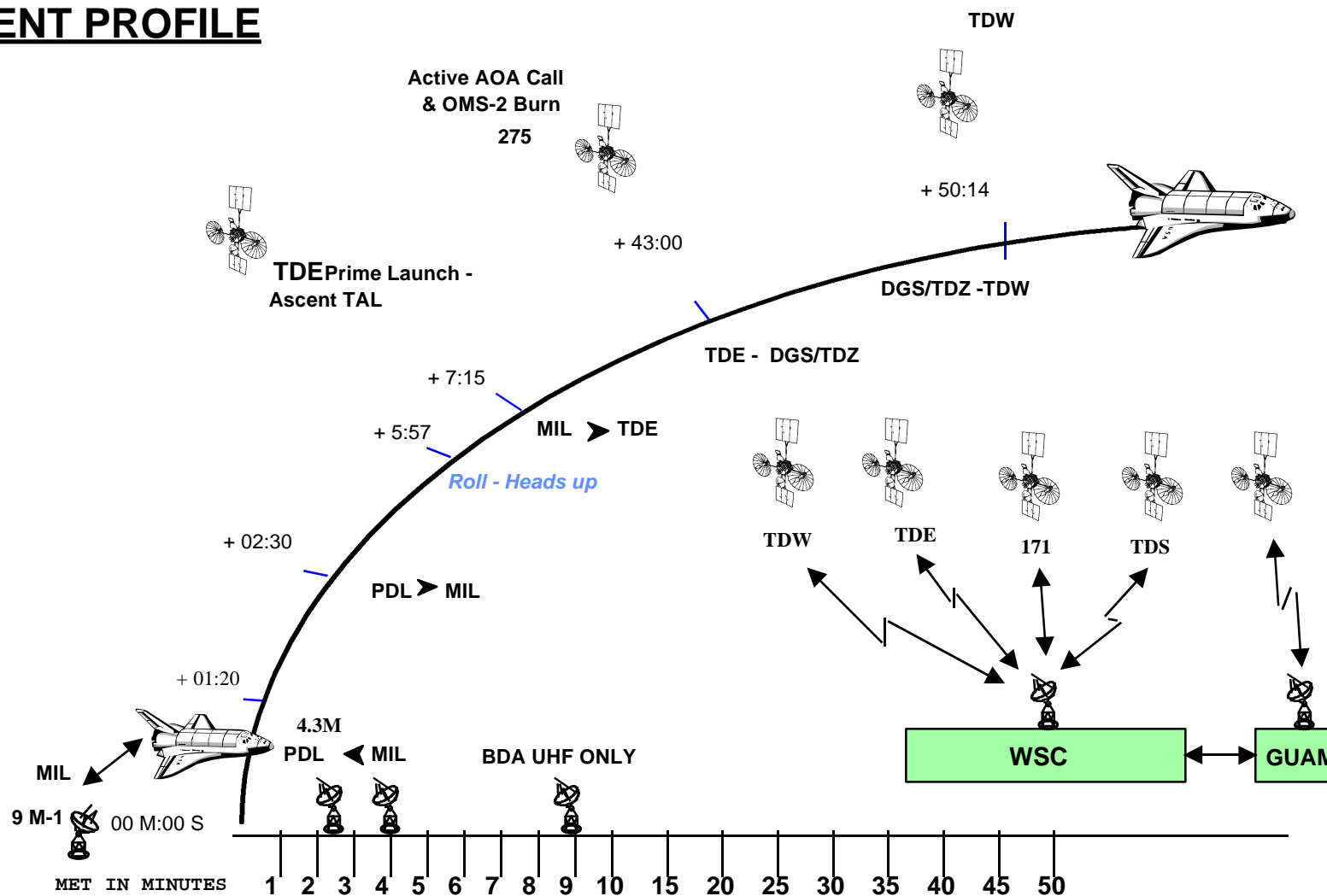
- **MDM AND MSS**
  - **THE MDM AND MSS WILL BE AVAILABLE FOR A SECOND LEVEL BACKUP SUPPORT THROUGH STS-95**
    - **MSS/MDM REACTIVATION TIME IS APPROXIMATELY FIVE MINUTES**
- **LAUNCH THROUGH LANDING**
  - **NASCOM 2000 NETWORK SOLUTION FORWARD LINK FOR GN SITES, IP RETURN LINK TELEMETRY**
  - **OAS WILL SUPPORT FULL IP FORWARD AND RETURN FOR SHUTTLE AND SPARTAN**
  - **SN WILL SUPPORT FULL IP**

**N&MS****CODE 450.3****STS-95  
NETWORKS****DATA SUPPORT CONFIGURATION FOR STS-95****Shuttle****Spartan**

**N&MS****CODE 450.3****STS-95  
NETWORKS****SPARTAN TEXAS/STS COMMUNICATIONS OVERVIEW**

2272.5 MHz Downlink 4 Msps (2 Mbps) or 1 Msps (500 Kbps); 2092.6 MHz Uplink 2 Kbps CMD; CMD via Nascom 2000; TLM via IP



**N&MS****CODE 450.3****STS-95  
NETWORKS****ASCENT PROFILE**

**N&MS****CODE 450.3****STS-95  
NETWORKS**

## **CONFIGURATION MANAGEMENT**

- **HARDWARE/SOFTWARE FREEZE**
  - **NEW MILA/PDL EQUIPMENT CONFIGURATION FROZEN FOLLOWING SUCCESSFUL ORBITER INTERFACE TEST ON SEPTEMBER 30, 1998**
  - **INTEGRATED NETWORKS FREEZE WILL BE IMPOSED PRIOR TO THE SPACE NETWORK VERIFICATION/VALIDATION OR LAUNCH MINUS 7 DAYS; WHICHEVER COMES FIRST**
  - **EXEMPTIONS ARE APPROVED BY THE NETWORK DIRECTOR**
- **CRITICAL PERIOD RESTRICTIONS**
  - **CRITICAL PERIODS HAVE BEEN IDENTIFIED**
  - **MAINTENANCE AND TESTING RESTRICTIONS ARE IMPOSED ON SPACE AND GROUND NETWORK ELEMENTS DURING CRITICAL MISSION PERIODS**

**N&MS****CODE 450.3**

# STS-95 NETWORKS

## CRITICAL PERIODS

<i>EVENT</i>	<i>START</i>	<i>STOP</i>
LAUNCH RENDEZVOUS MISSION	LAUNCH -4 HOURS	LAST RENDEZVOUS BURN ON FD1
LAUNCH NON-RENDEZVOUS MISSION	LAUNCH -4 HOURS	“GO FOR ORBIT OPS”
PAYLOAD DEPLOY	DEPLOY -3 HOURS	FINAL SEP BURN (+1 ORBIT DELAY)
RENDEZVOUS/DOCKING	2 HOURS PRIOR TO FIRST DAY OF RENDEZVOUS BURN (~CREW WAKEUP)	HATCH OPENING (+1 ORBIT DELAY FOR CONTINGENCY)
RENDEZVOUS GRAPPLE/RETRIEVE	2 HOURS PRIOR TO FIRST DAY OF RENDEZVOUS BURN (~CREW WAKEUP)	PAYLOAD BERTHING (+1 ORBIT DELAY FOR CONTINGENCY)
UNDOCKING	UNDOCKING - 3 HOURS	FINAL SEP BURN (+1 ORBIT DELAY)
EVA	EVA EGRESS - 1 HOUR	EVA INGRESS + 1 HOUR
LANDING	TD - 5 HOURS	WOW




IDENTIFIES CRITICAL PERIODS


# Goddard Space Flight Center

## CERTIFICATE OF FLIGHT PROJECTS DIRECTORATE NETWORKS READINESS

**THIS IS TO CERTIFY THAT WITH SUCCESSFUL COMPLETION OF FLIGHT READINESS  
PREPARATIONS AND CLOSURE OF ASSOCIATED ACTION ITEMS, ALL INTEGRATED  
NETWORKS AND MISSION SERVICES ELEMENTS ARE READY  
TO SUPPORT THE STS-95 SPACEHAB/SPARTAN 201-05 MISSION.**

  
G. A. MORSE/NASA  
SPACE SHUTTLE  
NETWORK DIRECTOR

DATE

  
W. WATSON/NASA  
GSFC CENTER DATA  
SERVICES MANAGER


DATE

  
R. FLAHERTY/NASA  
SPACE NETWORK PROJECT

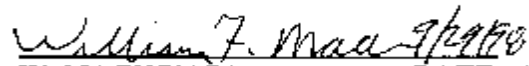
DATE

  
R. N. HARRIS/NASA  
GSFC CENTER MISSION  
SERVICES MANAGER

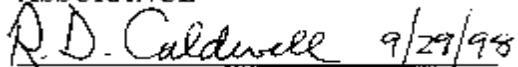
DATE

  
S. CURRIER/NASA  
GROUND NETWORK  
PROJECT


DATE

  
W. MACK/NASA  
OFFICE OF FLIGHT  
ASSURANCE

DATE

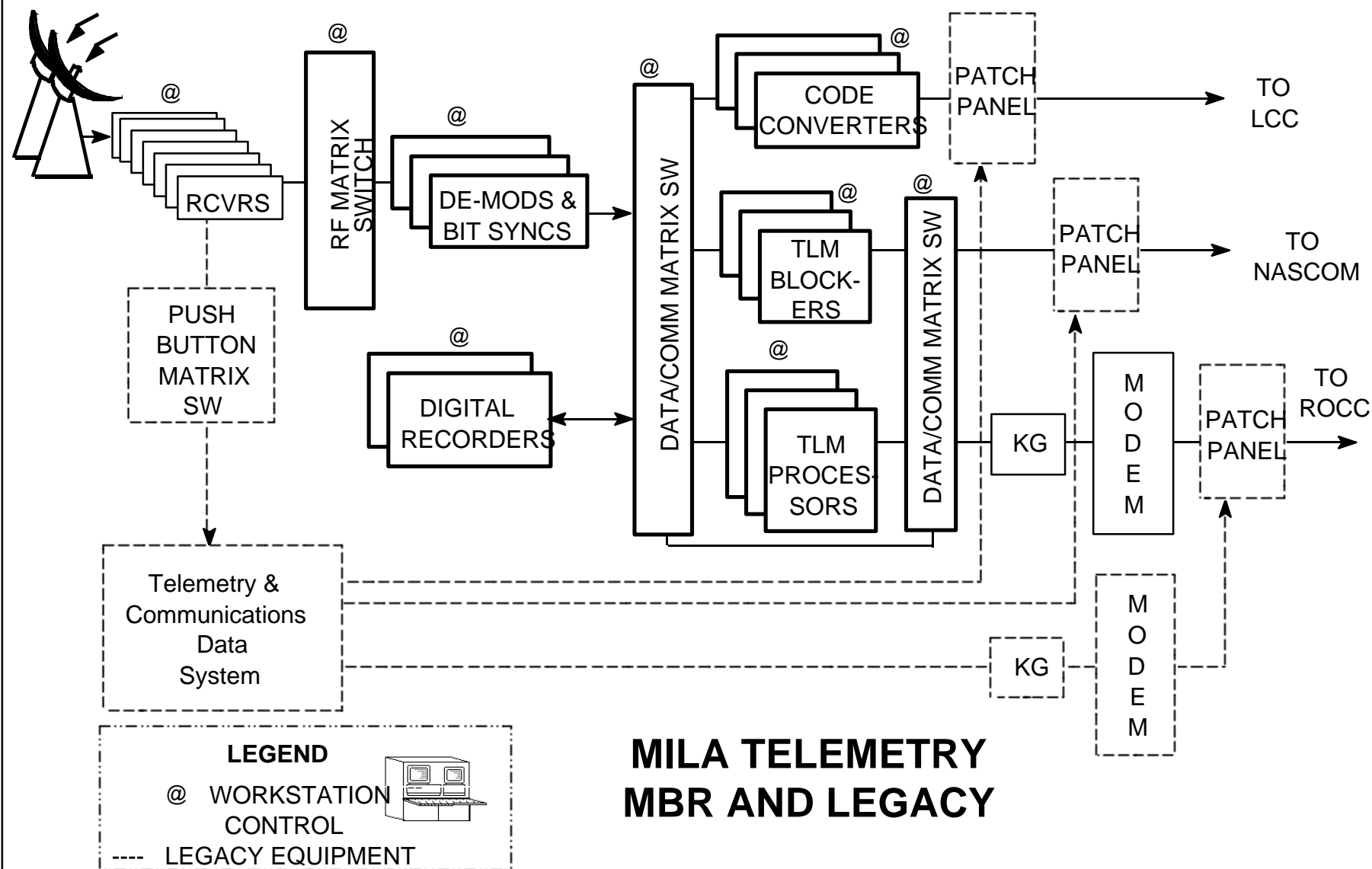
  
R. D. CALDWELL  
for W. FRIEDMAN/ATSC  
VICE PRESIDENT  
GSFC PROGRAMS

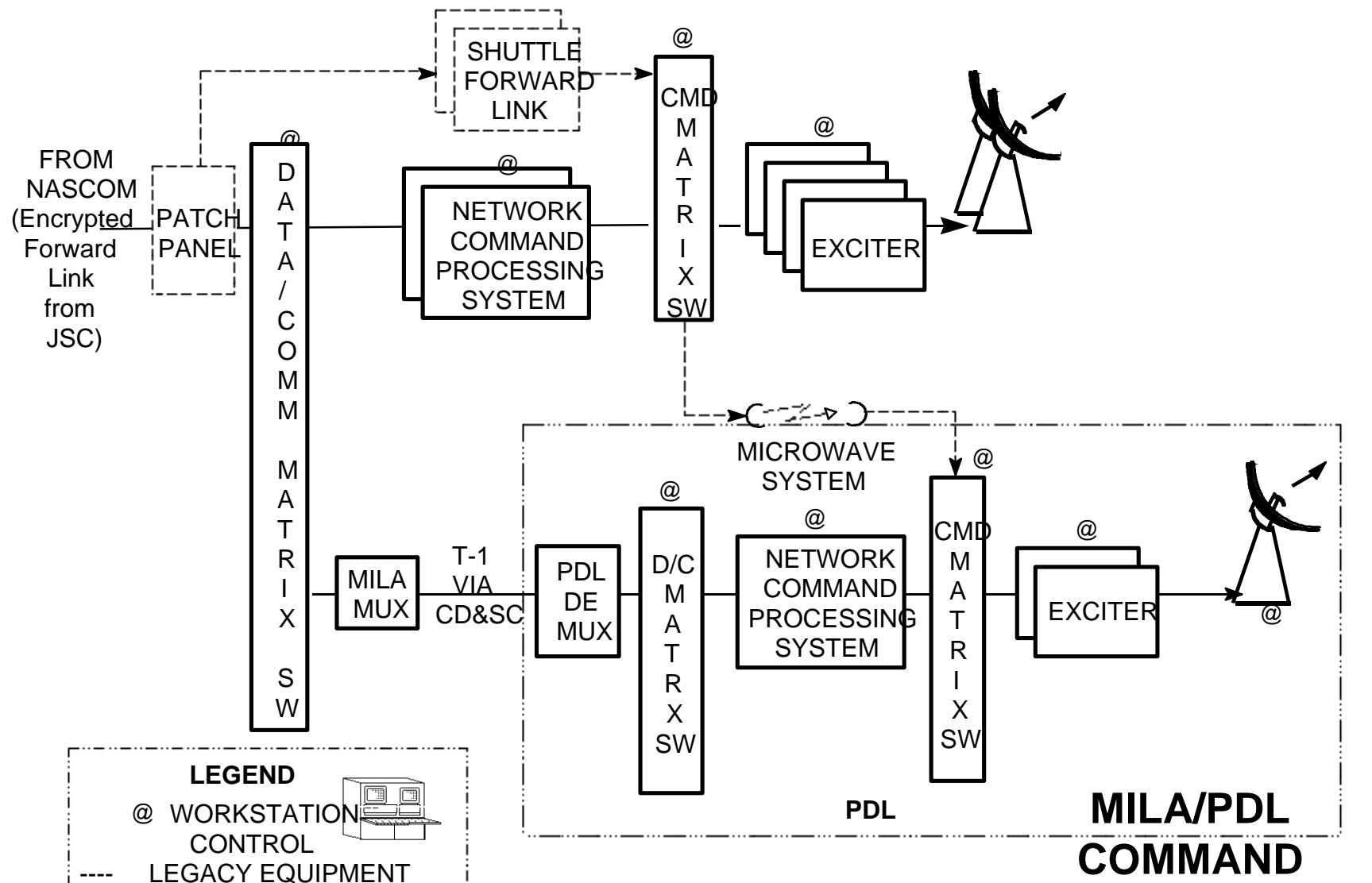
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T. SOBCHAK/NASA  
SPACE SHUTTLE  
NETWORKS TEST MANAGER

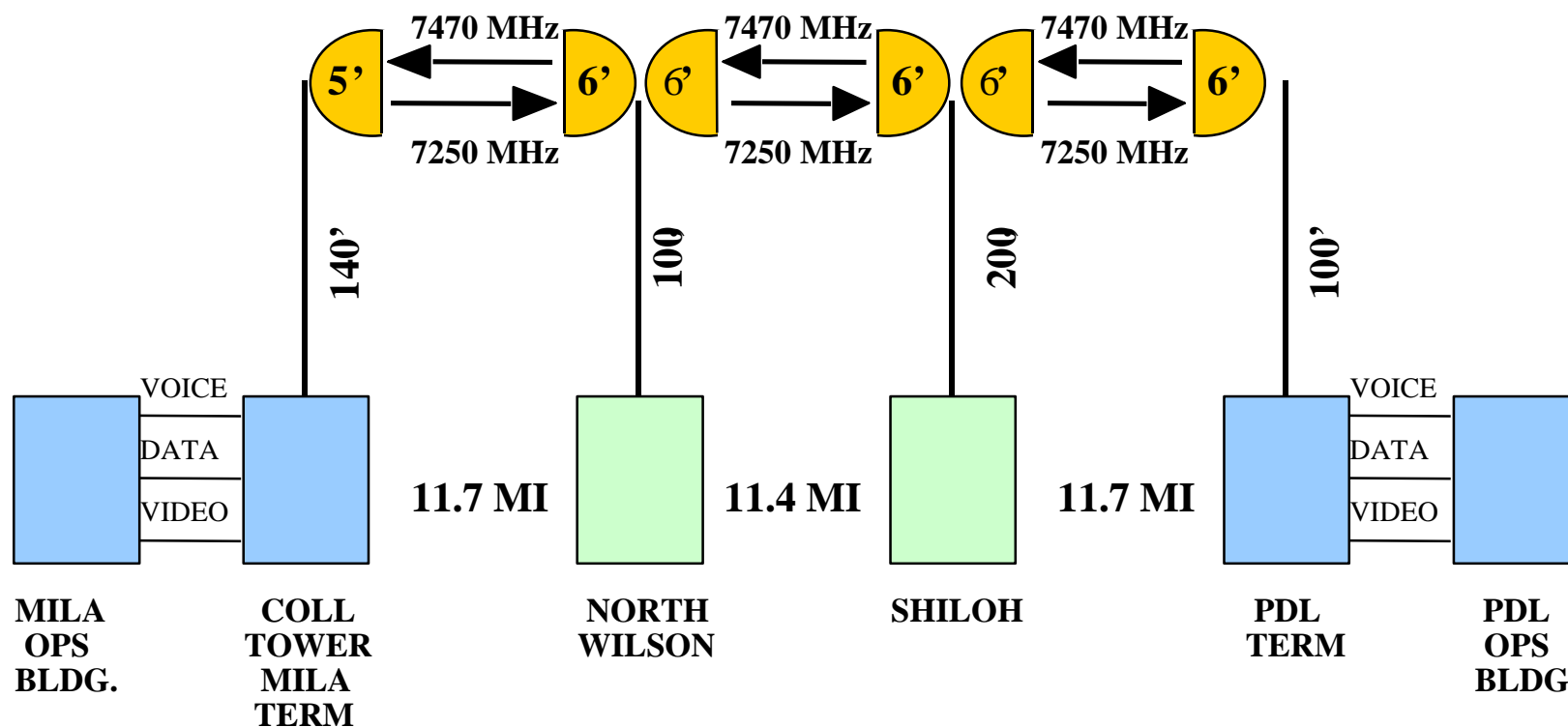
DATE

**N&MS****CODE 450.3****STS-95  
NETWORKS****BACKUP**

**N&MS****CODE 450.3****STS-95  
NETWORKS**

**N&MS****CODE 450.3****STS-95  
NETWORKS**

**MILA/PDL  
COMMAND  
MBR AND LEGACY**

**N&MS****CODE 450.3****STS-95  
NETWORKS****OLD MIL/PDL MICROWAVE LINK**



**N&MS****CODE 450.3****STS-95  
NETWORKS****SPARTAN TEXAS/STS COMMUNICATIONS**

<i><b>Element</b></i>	<i><b>Uplink</b></i>	<i><b>R/T Downlink</b></i>	<i><b>Max Playback</b></i>
DGS	2 Kbps	500 Kbps	1 Mbps
Dryden	2 Kbps	500 Kbps	500 Kbps
MIL	2 Kbps	500 Kbps/2 Mbps	2 Mbps
WSC	2 Kbps (STS)	1 Msps (500 Kbps)	

- **COMMANDING IN THE BLIND TURNS ON TRANSMITTER**
- **STATION WILL CONFIRM TRANSMITTER ON BY VOICE CALL**
- **FIRST 7 DEPLOYED CONTACTS VIA ORBITER PI LINK**
  - **GROUND SITES WILL CONFIRM RF (NO DATA REQUIREMENTS)**